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# RF Exposure Evaluation Report

**Report No. :** CQASZ20201001200E-02

**Applicant:** Zhaoqing Grandehome sanitary Ware co,Ltd.

**Address of Applicant:** No.30 industrial Avenue, Fuxi Industrial Park, Dasha Town, Sihui City

**Equipment Under Test (EUT):**

**EUT Name:** m18 bluetooth decoder module

**Mode No.:** M18

**Brand Name:** GRANDE HOME

**FCC ID:** 2AXTN-LDWYS112

**Standards:** 47 CFR Part 1.1307

47 CFR Part 2.1093

KDB447498D01 General RF Exposure Guidance v06

**Date of Receipt:** 2020-10-12

**Date of Test:** 2020-10-12 to 2020-10-27

**Date of Issue:** 2020-10-27

**Test Result :** **PASS\***

\* In the configuration tested, the EUT complied with the standards specified above.

**Tested By:**

*Martin Lee*

(Martin Lee)

**Reviewed By:**

*Sheek Luo*

(Sheek Luo)

**Approved By:**

*Jack Ai*

( Jack Ai)



## 1 Version

### Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20201001200E-02	Rev.01	Initial report	2020-10-27

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### 3 General Information

#### 3.1 Client Information

Applicant:	Zhaoqing Grandehome sanitary Ware co,Ltd.
Address of Applicant:	No.30 industrial Avenue, Fuxi Industrial Park, Dasha Town, Sihui City
Manufacturer:	Zhaoqing Grandehome sanitary Ware co,Ltd.
Address of Manufacturer:	No.30 industrial Avenue, Fuxi Industrial Park, Dasha Town, Sihui City
Factory:	Zhaoqing Grandehome sanitary Ware co,Ltd.
Address of Factory:	No.30 industrial Avenue, Fuxi Industrial Park, Dasha Town, Sihui City

#### 3.2 General Description of EUT

Product Name:	m18 bluetooth decoder module
Model No.:	M18
Trade Mark:	GRANDE HOME
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.2
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK
Transfer Rate:	1Mbps/2Mbps
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	<input type="checkbox"/> Mobile <input type="checkbox"/> Portable <input checked="" type="checkbox"/> Fix Location
Test Software of EUT:	FCC Assist 1.0.1.2 (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	-1.0dBi
EUT Power Supply:	120V 60Hz

## 4 SAR Evaluation

### 4.1 RF Exposure Compliance Requirement

#### 4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

##### 4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

#### 4.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$  is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion

### 4.1.3 EUT RF Exposure

For BT

#### Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance		Maximum tune-up Power
		(dBm)		(dBm)
Lowest(2402MHz)	2.270	1.5±1		2.5 1.778
Middle(2441MHz)	3.410	2.5±1		3.5 2.239
Highest(2480MHz)	4.350	3.5±1		4.5 2.818
$\pi/4$ DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance		Maximum tune-up Power
		(dBm)		(dBm)
Lowest(2402MHz)	2.890	2.0±1		3.0 1.995
Middle(2441MHz)	4.030	3.5±1		4.5 2.818
Highest(2480MHz)	4.970	4.0±1		5.0 3.162

#### Worst case: $\pi/4$ DQPSK

Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	2.890	2.0±1	3.0	1.995	0.618	3.0
Middle (2441MHz)	4.030	3.5±1	4.5	2.818	0.881	
Highest (2480MHz)	4.970	4.0±1	5.0	3.162	0.996	

Conclusion: the calculated value  $\leq 3.0$ , SAR is exempted.

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20201001200E-01.